

WHAT IS CLAIMED IS:

1. A computer-readable record medium that stores a program for making a computer perform the  
5 multicast process of delivering information to a plurality of delivery destinations like broadcasting, the program making a computer function as:

a group generating unit for generating groups including at least one data packet from a group of data  
10 packets to be delivered;

a delivery times determining unit for determining the number of times each of the groups generated by the group generating unit is delivered; and

a delivering unit for repeating delivery of  
15 each of the groups generated by the group generating unit times determined by the delivery times determining unit.

2. The record medium according to claim 1, wherein the group generating unit determines the number of  
20 data packets included in each group according to the state of a communication line or delivery destination.

3. The record medium according to claim 1, wherein the group generating unit determines the total  
25 amount of data included in each of data packets included in each group according to the state of a communication line or delivery destination.

4. The record medium according to claim 1,  
further storing a program for making a computer function  
as a control information delivering unit for delivering  
5 control information necessary for exercising control in  
the case of receiving data to be delivered before  
delivering the data by the delivering unit.

5. The record medium according to claim 4,  
10 further storing a program for making a computer function  
as:

a congestion state measuring unit for measuring  
the congestion state of a system;

a delivery destination number specifying unit  
15 for specifying the number of delivery destinations to  
which data is delivered; and

a processing time calculating unit for  
referring to the congested state and the number of the  
delivery destinations and for calculating time needed for  
20 a process performed in the case of responses being given  
by the delivery destinations,

wherein the control information delivering unit  
delivers the control information including the processing  
time calculated by the processing time calculating unit to  
25 help to determine waiting time before the delivery  
destinations responding.

6. The record medium according to claim 5,  
wherein the congestion state measuring unit measures the  
congestion state of a system on the basis of time needed  
for accessing a memory and the state of the load on a  
5 processor.

7. The record medium according to claim 1,  
further storing a program for making a computer function  
as a redelivering unit for redelivering a corresponding  
10 portion of a previously delivered data packet at need in  
the case of having received information regarding a state  
in which the data packet was received from a predetermined  
delivery destination.

8. A multicast delivery method for delivering  
information to a plurality of delivery destinations like  
broadcasting, the method comprising:

a group generating step for generating groups  
including at least one data packet from a group of data  
20 packets to be delivered;

a delivery times determining step for  
determining the number of times each of the groups  
generated by the group generating step is delivered; and

a delivering step for repeating delivery of  
25 each of the groups generated by the group generating step  
times determined by the delivery times determining step.

9. A computer-readable record medium that stores a program for making a computer perform the process of receiving data packets multicasted from a delivery source, the program making a computer function as:

5 a control information receiving unit for receiving control information delivered from the delivery source before a data packet;

a receiving preparing unit for preparing receiving the data packet according to the control  
10 information; and

a data packet receiving unit for receiving the data packet delivered from the delivery source after the control information.

15 10. The record medium according to claim 9, further storing a program for making a computer function as:

a received data quality judging unit for judging whether a data packet was received normally by the  
20 data packet receiving unit; and

a judgment responding unit for sending information indicative of a judgment made by the received data quality judging unit to the delivery source in the form of a packet as a basic unit for accounting.

25 11. The record medium according to claim 10, further storing a program for making a computer function

as:

a processing time extracting unit for extracting processing time the delivery source will need for processing responses given by all of the delivery destinations from the control information; and

a waiting time calculating unit for calculating waiting time before the judgment responding unit responding by multiplying the processing time and a random number together.

12. A multicast receiving method for receiving data packets multicasted from a delivery source, the method comprising:

a control information receiving step for receiving control information delivered from the delivery source before a data packet;

a receiving preparing step for preparing receiving the data packet according to the control information; and

a data packet receiving step for receiving the data packet delivered from the delivery source after the control information.